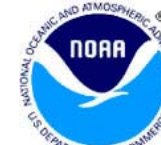
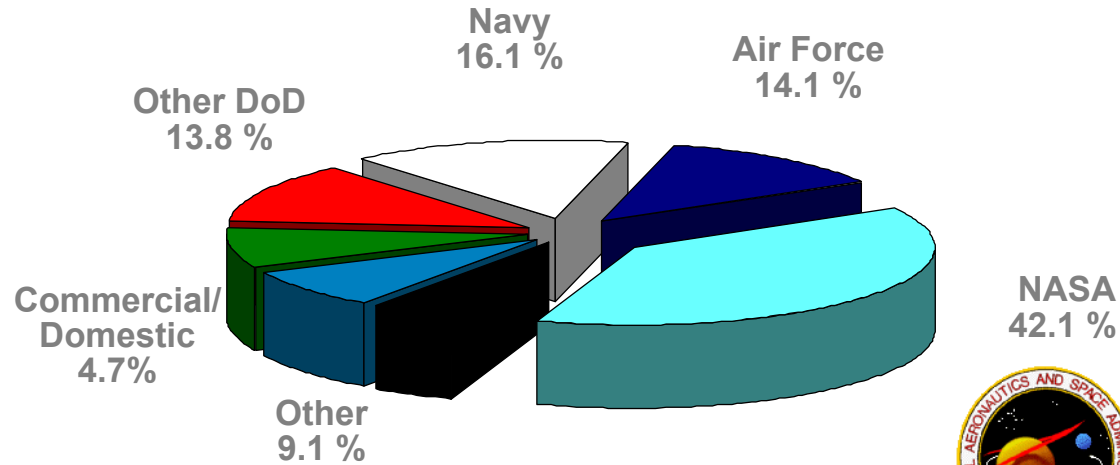




HTSI DataLynx Capabilities
March 2003
Stephanie Gonzales

HTSI Customer Base



HTSI's Space Operations History

IMP-8
ICE
IUE
HCMM
SAGE
ASPC

TIMATION
I & II

ERBS

TDRSS

SOHO

PIONEER

COBE

SSTI/Lewis

RADARSAT

SAMPLEX

MSTI

ROCSAT

IRIDIUM

Clementine

QuikSat

Landsat7
TERRA
EO-1
AQUA
AURA
ICESat
QuikSCAT
WIRE
GRACE 1&2

MINI
Track

NASA STDN

NASA DSN

NASA SN

USAF SCN

ROCSAT

LEO-T

DATALYNX

Full Life Cycle Involvement

- Concept Definition to Retirement
- Ground and Space System Development
- Requirements, Development, Integration, Test

**Over 700 Spacecraft Since 1958 in
Every Orbit, Application, and Configuration**

Deep Space	Remote Sensing
Intelligence	Space Physics
Smallsats	Defense
Astrophysics	Earth Science
Communications	

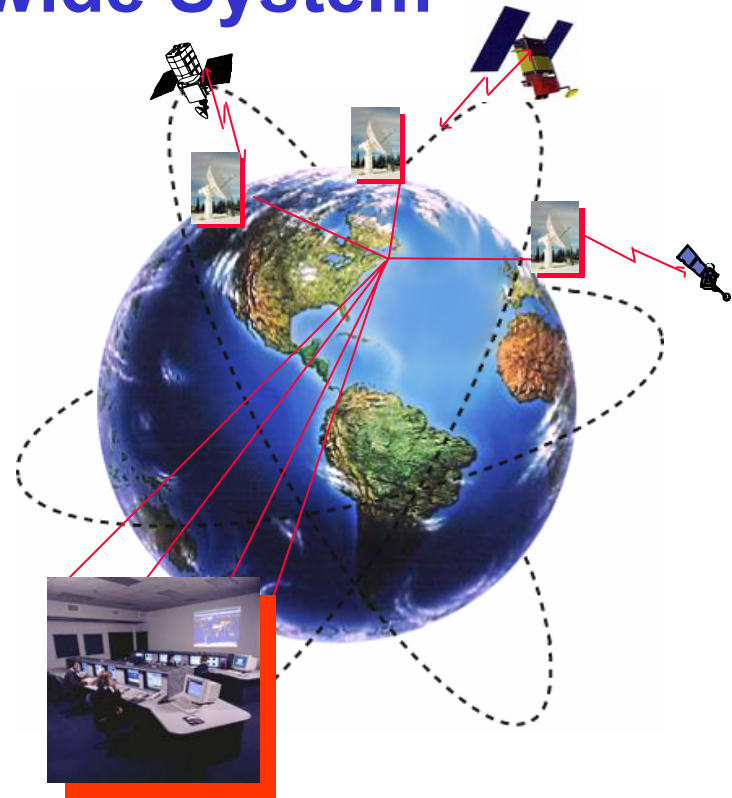
The Most Experience In The Aerospace Community

DataLynx's Worldwide System

DataLynx Charter

Provide cost-effective; fee for service space operations and telemetry, tracking and control (TT&C) capabilities to support "earth-orbiting" or similar assets.

- Manage the development and operation of a worldwide ground network of DataLynx owned and partner tracking stations
 - Provide turn-key systems (or system components) with custom solutions as required with a goal towards developing and expanding network
- Development and operation of satellite operations teams and operations control facilities to support multi-mission commercial customers
- Establish a worldwide data distribution and processing network for asset data capture, archival and delivery of data to and from the customer



DataLynx Service Offerings

- **Tracking, data acquisition, and commanding (TDAC)**
- **Satellite asset management and operations (SAMO)**
- **Data management and processing (DP/DM)**

DataLynx Commercial Network



DataLynx Ground Station



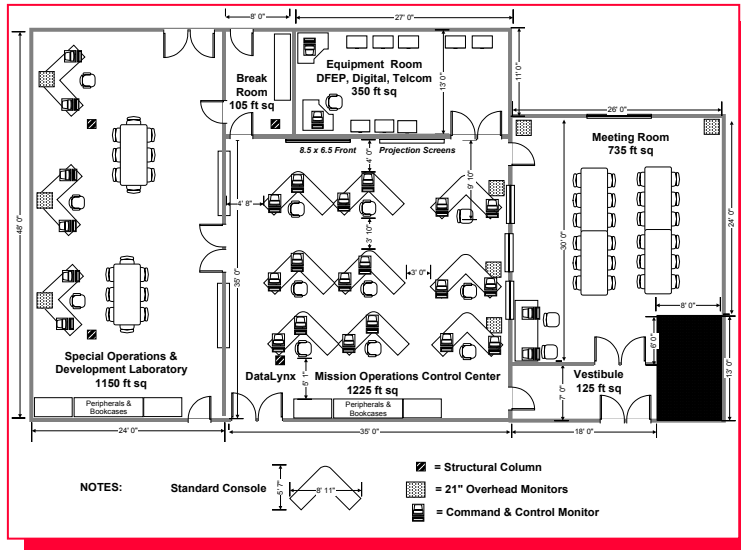
System Attributes

- 11 Meter S/X-Band Antenna
- Designed to support remote sensing missions (Landsat-7, Terra, Aqua, EO-1, IceSAT, QuikSCAT)
- Data Rates up to 400 Mbps (200Mbps per channel) (Upgradable to 640 Mbps; 320Mbps per channel)
- Real-time data quality metrics
- Remote Operations/Diagnostics From Centralized Facility
- Automated Fault Detection, Isolation and Resolution
- Data Storage via RAID's to Media or Data Link
- Dedicated Data Lines to Stations Ensures Online Resources
- Commercial Communication Transport Channels
- Direct Interface to NASA's NISN
- Compatibility Test Suite Available

Operational Status

- First Commercial Station On NASA's Core Network
 - First Commercial Provider with Full NASA Security Certification
 - NASA Tracking Certification
- Currently supporting 8 NASA and 2 ESA missions
- Global network of partner stations

DataLynx Operations Center



System Attributes

- Multi-Satellite and Constellation Capability
- Low Staffing Requirements
- Automated Software Functionality
 - Command Generation and Formatting
 - Orbit Determination, Propagation, Maneuver Planning
 - Anomaly Recognition/Resolution
 - Resource Scheduling
- Remote Operations
 - TLM Monitoring, Planning, CMD Generation
- Variable Data Links to Customers
 - Dial-In Capability
 - Internet Accessibility
- Data Archiving with Online Data Retrieving
- Data Encryption Available
- 24x7 Operations Support in a Secure Facility with Backup Power Generators

Operational Status

- Operating DataLynx Ground Network 24x7
- Providing backup MOC support for Landsat-7 and EO-1
- Selected for Kepler Mission Operations Services



Honeywell Technology Solutions Inc.

DataLynx Customer Interfaces

Easy access to DataLynx stations through secure Web page

Ground Station Scheduler

- Passes available
- Pass parameters
- Station configuration selection
- Orbit data

Real-Time Status Display

- Critical Ground Station Status Points
- Frame Capture
 - On-Site Video Feed
 - Spectrum Analyzer

Pass Description

Spacecraft	Station ID	AOS	LOS	Initial Azimuth (deg)	Max Elevation (deg)	Configuration	Orbit No.	Duration
lan7	pf1	11/08/2000 22:16:47	11/08/2000 22:27:40	10.929	38.639	1	93	663

DATALYNX Scheduling System
Ground System Scheduler

Customer: WOTIS

Scheduler Options

- Schedule a Pass
- Edit a Pass
- Delete a Pass
- View Current Requests
- Download Pass Schedule
- Download Configuration
- Submit Orbit Data
- Submit Request File
- Contact DataLynx
- View Orbit Data
- Log Off

Daily Schedule
2000-313 00:00:00

tera

00:00 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00

qkst

00:00 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00

lan7

00:00 01:00 02:00 03:00 04:00 05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00 17:00 18:00 19:00 20:00 21:00 22:00 23:00

Download Pass Schedule

Use the form below to generate the output file. Select any combination of attributes to include in the output file. When finished, click the Download button. All dates should be entered in the format mm/dd/yyyy hh:mm:ss or yyyy-ddd hh:mm:ss

Start Date: End Date:

☒ Schedule ☐ Scheduled ☐ Available ☐ Unavailable

☒ Requests ☐ Scheduled ☐ Unscheduled

Download Pass Schedule

Use the form below to generate the output file. Select any combination of attributes to include in the output file. When finished, click the Download button. All dates should be entered in the format mm/dd/yyyy hh:mm:ss or yyyy-ddd hh:mm:ss

Start Date: End Date:

☒ Schedule ☐ Scheduled ☐ Available ☐ Unavailable

☒ Requests ☐ Scheduled ☐ Unscheduled

Download Pass Schedule

Use the form below to generate the output file. Select any combination of attributes to include in the output file. When finished, click the Download button. All dates should be entered in the format mm/dd/yyyy hh:mm:ss or yyyy-ddd hh:mm:ss

Start Date: End Date:

☒ Schedule ☐ Scheduled ☐ Available ☐ Unavailable

☒ Requests ☐ Scheduled ☐ Unscheduled

Honeywell DATALYNX™

DataLynx Ground Station Status - COBE

Date/Time (GMT): 2000 312 16:02:28.7

GENERAL

Ground Station ID	PF1
User ID	EOS
Spacecraft	COBE
Configuration	NOSTATUS
Pre-pass Test	NOSTATUS
AOS (GMT)	2000 312 15:54:41
LOS (GMT)	02-Nov-2000 21:28:15
Time Remaining	00:20:22

TRACKING

Azimuth	130.38
Azimuth Track Mode	AUTOTRACK
Elevation	38.63
Elevation Track Mode	AUTOTRACK
X-Elevation	0.06
X-Elevation Track Mode	STANDBY

S-BAND TRANSMIT

Transmitter State	ON
Transmitter Mode	NO SWITCH
Exciter Modulator Mode	PM
CMD Transmitted	0
CMD Verified	0

S-BAND RECEIVE

	Data Path 1	Data Path 2
Receiver	MR700A	MR700B
Receiver Lock	LOCKED	LOCKED
AGC (VDC)	1.80	-0.70
Combiner Lock	LOCKED	LOCKED
Channel	BaseBand	Subcarrier
Data Rate (bps)	4.10	2.00
Bit Sync Lock	UNLOCKED	LOCKED
Frame Sync Status	SEARCH	LOCK
Frames Received	0	136
CRC Errors	0	0
RS Corr Errors	0	0
Dropouts	0	5

For more information, visit the DataLynx web site

DataLynx Features

Service Offering

- **Ground Station Passes**
 - Automated TT&C passes
 - Robust Scheduling Interface
 - Web telemetry monitoring
 - Compatibility testing
 - Use of Partner sites for LEOP anomalies, & augmented service
 - Backup or LEOP supplemental support
- **Flight Operations (DOC)**
 - Main Operations Center in Columbia, MD
 - Real-time flight operations
 - Mission Planning & Scheduling
 - Orbit determination & propagation
 - Options for data processing
 - HTSI maintains design via shared sustaining engineering efforts

Complete System

- **Leverage HTSI Corporate Design to provide dedicated ground network & control**
 - Co-locate at DataLynx sites
 - Ability to sell excess capacity through DataLynx
 - Co-locate at customer processing facility

Future Expansion

- **Willing to augment capabilities to meet customer needs:**
 - L band
 - Ka band
 - Ku Band
 - X-band Uplink

Service Offering Tailored to Meet Customer's Requirements